

Utility of Consensus Statement in Assessment of Obesity: A Study among Undergraduate Medical Students from Rural Northwest India

Shailja Sharma, Sunil Kumar Raina, Ashok Kumar Bhardwaj,
Vishav Chander, Dinesh Kumar, Sushant Sharma

Department of Community Medicine, Dr. Rajendra Prasad Government Medical College, Tanda, Kangra, Himachal Pradesh, India

ABSTRACT

Introduction: In India, obesity is emerging as an important health problem particularly in the urban areas, paradoxically coexisting with under nutrition. Almost 30-65% of adult Indians are either overweight or obese or have abdominal obesity. **Materials and Methods:** A cross-sectional study design was used to assess the prevalence of obesity among undergraduate medical using consensus statement for obesity in India. **Results:** The results of the body mass index (BMI) calculations show 26 females and 4 males (29.79% of total students) with a BMI of $<18 \text{ kg/m}^2$ as underweight, whereas 13 boys and 4 girls (15.54% of total students) as obese with a BMI of 25 kg/m^2 and above. A total of 18 boys and 6 girls (21.26% of total students) were overweight with a BMI between 23 and 24.9 kg/m^2 . **Discussion:** It is estimated that by application of these guidelines, additional 10-15% of Indian population would be labeled as obese or overweight. We see this very clearly in our study, where we see an increase of 14.53% of students classified as obese and 5.93% students as overweight on using the guidelines of the consensus statement.

Keywords: Consensus statement, obesity, utility

Introduction

Obesity is an increasingly important health problem world-wide, including the developing countries. In India, obesity is emerging as an important health problem particularly in the urban areas, paradoxically coexisting with under nutrition. Almost 30-65% of adult Indians are either overweight or obese or have abdominal obesity. The rising prevalence of overweight and obesity in India has a direct correlation with the increasing prevalence of obesity related co-morbidities.^[1]

Studies show excess cardiovascular morbidity at the “normal” range of body mass index (BMI) in the Asian populations. Data on Asian Indians residing in New Delhi, showed that 66% men and 88% women, classified as non-obese based on BMI (World Health Organization [WHO] cut-offs) had ≥ 1 cardiovascular risk factor(s).^[2]

Evidence suggests that the body composition abnormalities of Asian Indians may have an important bearing on the pathogenesis of metabolic derangements. First, their body fat is more and muscle mass less as compared with other Asian ethnic groups, Caucasians and African Americans. Some Indians considered non-obese by the WHO criteria of BMI cut-offs are actually obese when body fat is used to define obesity. Second, there is a high prevalence of abdominal adiposity even in people who are otherwise considered to be non-obese.^[3] Abdominal obesity is increasingly being recognized as an important cardiovascular risk factor. In some studies, association of abdominal obesity with various metabolic risk factors appears to be stronger than generalized adiposity. Waist circumference (WC) is a simple and easily obtainable anthropometric parameter to measure the abdominal obesity.^[4]

Data suggests that the proposed cut-offs for defining overweight and obesity are not appropriate for Asian Indians and that Asian Indians are at a risk of developing obesity related comorbidities at lower levels of BMI and WC.^[4]

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/2249-4863.120759

Address for correspondence: Dr. Sunil Kumar Raina,
Department of Community Medicine, Dr. Rajendra Prasad
Government Medical College, Tanda, Kangra,
Himachal Pradesh, India
E-mail: ojasrainasunil@yahoo.co.in

More than a 100 medical experts from across the country and belonging to various fields of internal medicine participated to develop Asian Indian — specific guidelines for defining and managing overweight and obesity. The consensus meeting was held at New Delhi on 15th-16th November, 2008, discussion of the panelists was presented to the consensus group and unanimously adopted as guidelines.^[4]

The current study aims at studying the utility of the consensus statement in assessment of obesity. The importance of evaluating this utility lies in its implication for developing prevention strategies. The need for using these revised criteria in general practice cannot be overemphasized more.

Materials and Methods

The present study, cross-sectional in nature was conducted in a medical college in a rural area in Northern India on under graduate M.B.B.S students. There are a total of 350 undergraduate students in the college, 100 each in the 1st, 2nd and 3rd years and 50 in the final year. A total of 250 students were offered participation in the study, the purpose of the study was explained to each student and 212 students agreed to participate in our study. The study was carried out through the month of September. Data was collected after obtaining the necessary approval from the college authorities before the commencement of measurement.

Anthropometric measurements of weight, height and WC were recorded.

Weight was recorded using a portable scale after standardization. The study subjects removed shoes and heavy clothing prior to weighing.

To record the height, the subjects stood with their scapula, buttocks and heels resting against a wall, the neck was held in a natural not stretched position, the heels were touching each other, the toe tips formed a 45° angle and the head was held straight such that Frankfurt plane was horizontal. Height was measured using a stature meter.

WC was measured using a flexible non-elastic measuring tape. Individuals stood with their feet together, arms resting by their side. The WC was taken as the plane between the umbilical scar and the inferior rib border.

The BMI was calculated using the Quetelet's equation (ratio of weight in kg and square of height in m). The cut-off values for defining obesity were taken according to the values given in consensus statement for Indians i.e., 18-22.9 kg/m² normal, 23-24.9 kg/m² over weight, >25 kg/m² obese.

Results

The results of the BMI calculations show 26 females and 4 males (29.79% of total students) with a BMI of <18 kg/m² as underweight, whereas 13 boys and 4 girls (15.54% of total

students) as obese with a BMI of 25 kg/m² and above. 18 boys and 6 girls (21.26% of total students) were overweight with a BMI between 23 and 24.9 kg/m². The mean BMI for males was found to be 21.58 ± 2.48. The mean BMI for females was 19.70 ± 2.50 kg/m² [Table 1].

A comparison between the results using the WHO classification and the consensus statement is done in this table. Using the WHO classification for the same results, we see that 15.33% (3.03% females, 12.3% males) students were overweight and 1.01% (1.01% females, nil males) were obese, whereas using the consensus statement it is observed that a total of 15.54% (4.04% females 11.5% males) students were found obese whereas 21.26% students (6.06% females, 15.2% males) were found to be overweight. We see an increase of 14.54% among students who were classified as obese and an increase of 5.93% among students classified as overweight on using the consensus statement [Table 2].

The WC measurements show that 68 boys (60.17%) had a WC between 79 and 90 cm and 3 (2.6%) had WC above 91 cm. The mean of the WC among boys was 79.8 cm ± 5.38. The WC of 20 girls (20.20%) was between 73 and 79 cm and of 35 girls (35.35%) was above 80 cm. The mean of WC among girls was 75.24 cm ± 8.20 [Table 3].

The mean height of the boys was 170.8 cm ± 6.73 and of the girls was 159.5 cm ± 6.73.

Table 1: Prevalence of obesity using consensus statement

BMI	Girls N (%)	Boys N (%)
<18	26 (26.26)	4 (3.53)
18-22.49	63 (63.63)	77 (69.02)
23-24.9	6 (6.06)	18 (15.2)
25-30	3 (3.03)	13 (11.5)
>30	1 (1.09)	Nil

BMI: Body mass index

Table 2: Comparison of obesity using consensus statement and who cut-off

Sex	Remark	Whocut-offs (%)	Consensusstatement (%)
Girls	Overweight	3.03	6.06
	Obese	1.01	4.04
Boys	Overweight	12.3	15.2
	Obese	Nil	11.5

Table 3: Assessment of obesity using waist circumference as criteria

Gender	Waist circumference (cm)	N (%)
Boys	<78	42 (37.16)
	79-90	68 (60.17)
	>91	3 (2.6)
Girls	<72	44 (44.44)
	73-79	20 (20.20)
	>80	35 (35.35)

Discussion

The consensus statement presents the revised guidelines for the diagnosis of obesity, the metabolic syndrome and drug therapy and bariatric surgery for obesity in Asian Indians. It has been observed that there is a rising trend in prevalence of obesity and related metabolic diseases and effective interventions are needed in Asian Indians immediately. Asian Indians manifest clustering of cardiovascular risk factors and T2 diabetes mellitus (DM) at lower levels of obesity; hence, the diagnosis of obesity should be made at lower levels of weight for height than in non-Asians.^[4]

It is estimated that by application of these guidelines, additional 10-15% of Indian population would be labeled as obese or overweight.^[4] We see this very clearly in our study, where we see an increase of 14.53% of students classified as obese and 5.93% of students as overweight on using the guidelines of the consensus statement.

Studies carried out by Gupta and Ray in a Medical College in Midnapore, West Bengal shows 17.4% of students as overweight and 3.4% obese.^[5] Chabra *et al.* found 11.0% of students overweight and 2.0% of obese in a study on medical students in Delhi.^[6] In a study among medical students in Vizianagaram in Andhra Pradesh by Dantu Padmasree and Urey Ujwala, 1.44% of students were obese and 18.18% were overweight.^[7]

In none of the above mentioned studies have the consensus statement guidelines been used. If we go by the results in our studies, obesity is under reported in India by using the WHO guidelines for obesity.

If options of diet, exercise, drugs and surgery are applied at lower levels of obesity nearly 15% of the adult population (5-7 crore people) will benefit and T2 DM and cardiovascular disease should be prevented.^[4]

Management of obesity and related complications has been a domain of Endocrinologists and obesity specialists for long. An understanding on the use of revised criteria across medical practice is needed. It will be helpful if revised criteria are used in general and family practice while dealing with the adult population in India. This will go a long way in preventing complications related to obesity.

Conclusion

With the rising prevalence of obesity and its related complications in India, its prevention and management becomes important. The onus of prevention must be shared by all, primary care practitioners, family physicians and obesity related specialists. The guidelines of the consensus statement are definitely a better option than the WHO guidelines in planning this.

Limitations

A small study sample makes extrapolation to the general population difficult. Further, the socio-economic status of study participants may not be reflective of the general population. However, the study is able to fulfill its aim of examining the utility of the consensus statement in defining obesity in Indian population.

References

1. Anjaneyulu SR, Thiagarajan P. Anthropometric parameter-based assessment for cardiovascular disease predisposition among young Indians. *World J Cardiol* 2012;4:221-5.
2. Misra A. Revisions of cutoffs of body mass index to define overweight and obesity are needed for the Asian-ethnic groups. *Int J Obes Relat Metab Disord* 2003;27:1294-6.
3. Misra A. Body composition and the metabolic syndrome in Asian Indians: A saga of multiple adversities. *Natl Med J India* 2003;16:3-7.
4. Misra A, Chowbey P, Makkar BM, Vikram NK, Wasir JS, Chadha D, *et al.* Consensus statement for diagnosis of obesity, abdominal obesity and the metabolic syndrome for Asian Indians and recommendations for physical activity, medical and surgical management. *J Assoc Physicians India* 2009;57:163-70.
5. Gupta S, Ray TG, Saha I. Overweight, obesity and influence of stress on body weight among undergraduate medical students. *Indian J Community Med* 2009;34:255-7.
6. Chabra P, Grover VL, Aggarwal K, Kannan AT. Nutritional status and blood pressure of medical student in Delhi. *Indian J Community Med* 2006;31:248-251.
7. Padamsree D, Ujwala U. Influence of certain factors as overweight and obesity among undergraduate medical students at Vizianagaram. *Int J Recent Trends Sci Technol* 2012;5:38-42.

How to cite this article: Sharma S, Raina SK, Bhardwaj AK, Chander V, Kumar D, Sharma S. Utility of consensus statement in assessment of obesity: A study among undergraduate medical students from rural northwest India. *J Fam Med Primary Care* 2013;2:274-6.

Source of Support: Nil. **Conflict of Interest:** None declared.